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Playgrounds and Parks.

A CITY officer in Philadelphia is quoted as having recently said, in some public manner, "It would be better to have more playgrounds for growing boys and girls and fewer ornamental parks. The city owns the old Athletic Baseball Ground, and all we have done to it is to erect a fence around it and cut two diagonal paths across it. It is spacious, and makes an admirable playground. Here the boys and girls roll their hoops, play ball and engage in all sorts of harmless and healthful pastimes, and the people living in the vicinity think it is one of the best features of that section of the city. It would, in my judgment, be a first-rate idea to establish places like this in all parts of the city. They do not cost anything like so much as public parks or squares, and they are of more use."

In citing these ideas, the *Evening Post*, of this city, remarks that they might well "be acted upon also in other cities"; and we have no doubt that, if read without reflection, they may seem sensible to many well-meaning men and women. But it is always an unfortunate mode of argument to exalt one useful thing by depreciating another, and its employment in this case proves a fact upon which we have commented before. It proves that, while our people recognize the utility of those types of public grounds which are called "ornamental," they do not rate this utility at its proper value, or really understand those human needs, urban conditions and natural facts upon which it is chiefly based. As a rule, they think that small ornamental public grounds are useful as increasing the city's beauty, helping to purify its atmosphere and giving people a chance to sit down when they are tired. They look upon Central Park simply as a place where rich people may drive to "take the air" and see their friends; where exercise on foot or in the saddle may be had; where poor people may escape from the confinement of stuffy shops and homes, and where special places for special kinds of "recreation" may be provided. But in thinking thus they miss that real meaning of the word recreation which appears if it is written re-creation. No mere playground can serve the purpose of recreation in this truer, broader sense—the purpose of refreshment, of renewal of life and strength for body and soul alike.

The truest value of public pleasure-grounds for large cities is in the rest they give to eyes and mind, to heart and soul, through the soothing charm, the fresh and inspiring influence, the impersonal, unexciting pleasure which nothing but the works of Nature offer to man. A single fine tree, a small patch of green grass, a house-front gracefully draped with vines can exert this influence in a humble degree. A larger association of trees and grass and flowers, even if inartistically disposed, can exert it more powerfully upon eyes which, through long-continued denials, have ceased to be captious with regard to natural beauty. But when Art comes to Nature's help, in those urban places where Nature by herself is powerless to produce real beauty, then only is the full result attained; for then only are the charms of individual objects so disposed that they can have their full effect upon eye and mind.

Not much art was shown, for instance, when Bryant Park, in this city, was laid out. It consists chiefly of small stretches of turf and of rows of Silver Maples monotonously disposed. Nevertheless, if we could not have this park just where it lies and, in addition, have an open unshaded expanse prepared especially for children's active sports, we are better off with this park alone than with the playground alone. Some latitude for children's sports it affords; hundreds of babies, accompanied by tired women or children, daily sleep or prattle beneath its trees—babies who need fresh air and sunshine quite as much as their elder sisters and brothers, and are not provided for at all in a typical playground. And to every class of adults, in search of a refreshing hour, it offers cheering hospitality, while a mere glimpse of its greenness is a distinct refreshment to the thousands of weary toilers who daily pass it on the elevated railroad.

Madison Square is a prettier place than this—a more distinctly ornamental pleasure-ground. Look at it just now, at any hour of the day, filled in every corner with people who could not use an actual playground, and see whether you think any spot on earth can be more useful. People sometimes say that Washington Square is simply a resort for tramps. This is an exaggeration; for, lying close to some of the most crowded and reeking streets of the city, it attracts numbers of very poor people who may be unemployed for the time, but are not tramps in the opprobrious sense of the word. Moreover, any place which keeps even professional vagabonds from the crowded streets and bar-rooms is of distinct benefit to them and to the city as a whole. Jeanette Park is another place whose orderly plantations and bright flowers we may think of wider and deeper utility than, in such a locality, even a children's playground would be.

The beauty of all such spots is their most valuable element. Fresh air and sunshine and shade are precious in themselves, merely through their direct effects upon the body. But they are doubly precious when that sense of beauty is appealed to which is innate in every human soul, even in those that are most deeply degraded and are least definitely conscious of its possession. City children, deprived of the pleasure which natural beauty can give, are grievously defrauded of their rights, no matter how many spacious but barren playgrounds may be provided for them. Nor should the value of ornamental parks simply as additions to the city's beauty be underrated; for anything which adds to the attachment that child or adult feels for his place of residence tends to make him a better citizen. Parisians are notoriously more passionately attached to their city than any other people. Can we doubt that this is not merely because Paris is the most interesting and amusing of modern towns in so far as its human elements are concerned, but also because it is the most beautiful of modern towns? And in the production of this beauty architectural art has not played a more prominent or important rôle than gardening art.

We have pleaded in these columns for more children's

playgrounds too often to be accused of not recognizing their value to the community. But they should not be asked for, or wished for, at the expense of ornamental public grounds of any kind. Even from the physical point of view the latter serve the needs of larger numbers of people, and from the mental, spiritual point of view they are absolutely indispensable. They, and they alone, can supply urban populations with that kind and degree of beauty which is needed for their physical, mental and moral refreshment and inspiration.

The newspapers lately contained an account of a lawsuit which has interest for every one who believes that the owner of a tree has a right to complain when it is recklessly mutilated. The employees of a telephone company were stretching wires along the road which skirts the property of Mr. George W. Hawkins, near Newburg, in this state, and in doing so they disfigured half a dozen Spruce-trees, which had been planted by his father, by cutting off the branches. No consent to this mutilation had been given by the owner of the trees, and the linemen, as usual, had used their saws and axes without mercy. Mr. Hawkins sued the company for $600, estimating the damages at $100 a tree. The jury gave a verdict of $500. Under provisions of the code in this state, Mr. Hawkins' lawyers then moved that a triple judgment be made, and the court astounded the defendants by granting this and increased the judgment to $1,500. It is to be hoped that the higher courts will confirm this judgment and hold that a growing tree has a value beyond the mere amount of timber it contains, and that the owner has a right to watch its growth and enjoy its beauty, and to derive pleasure from its associations. The courts should take into account that a tree cannot be replaced in many years, and the wanton destruction of such property ought to call for exemplary damages. Ever since the country was settled we have been learning how to cut down trees, but it is high time that we learn the real value of those which have escaped and stand where they can delight us by their beauty and refresh us with their shade. The decision of this Orange county judge is a wholesome one, and such decisions are needed to teach the linemen of telephone and telegraph companies a lesson which will make them more cautious about invading private rights.

Some Old Town yards.

LAST summer, at the Columbian Exposition, in passing through Horticultural Hall, my attention was attracted in the Idaho section by three jars of fruit that, although in the midst of dozens of other jars, gave me a curious feeling of having seen the fruit before. But where? One jar was filled with beautiful yellow plums, a second with even more beautiful purple ones, and the third was labeled "Susquehanna peaches." Several times I went quite out of my way to look at them, but it was not until the Fair had become a thing of the past that the mystery was cleared up.

One day, in passing through what is now a closely built portion of this city, a vision rose in my mind, and I knew that I had long ago seen the same kinds of fruit in an old-fashioned town-yard, hidden from the street by the brick house, which, like its neighbors, was built out even with the sidewalk, and separated from the adjoining yards by high board fences, half-covered with climbing Roses, Snowberry and Kenea bushes. Against the rear wall of the house Apricot-trees were trained, and an arbor, covered by Catawba and Isabella Grape-vines, shaded the brick walk, where pigeons were always fluttering back and forth from the pathway to their cotes at the end of the long narrow yard. Between the arbor and side-fences were several fruit-trees, but the ever-to-be-remembered ones, the champions, were two Plum-trees which bore big oval plums, one a golden, the other a purple Egg, the most beautiful and perfect specimens of their kind. In the flickering shade of the trees a kind old grandfather moved, armed with a wonderful machine to hook off the fruit for the expectant children surrounding him.

The peaches grew in another yard, one whose like it would be hard to find nowadays within the borders of a city. From the house one entered first a little flower-garden, and then passed through a gate into the yard proper, guarded at the entrance by a tall Pear (Beurré d'Oieul), whose spire rose high above the other trees, though it was hard pressed by a rival Pear-tree in another corner, a Beurré Bosc. Here were also Plums, Apricots and Peaches, and though there were other kinds, from a very early sort to the late Morris White, nothing could approach the perfection of the great Griffith peaches.

Beyond this yard, which one was never willing to leave, was still another, the precinct sacred to the new or rare fruits. The side-fences formed a background for what were then both new and rare—white and red currants, raspberries and giant gooseberries. At the far end were the grape trellises, of which as a child I highly disapproved, because there was "no nice shade." I must have asked something about this abnormal state of affairs —every one else had arbors—for one day I remember this grandfather saying, "You can't have shade and grapes too," and thereupon gave me a bunch of grapes from a vine that he called by what I then thought the very funny name of "Rogers No. 4." There were more Peach-trees here and Cherries, and a Belle Lucratif Pear; and there was a Nectarine, dear to us from some story-book association, but we really cared for nothing else as we did for the great luscious peaches that finally were lost to us and became only a memory, until I found their double at the Fair in the Susquehanna peaches from Idaho.

Nowadays grandfathers with pastoral tastes spend some of their Sundays and a great deal of their money on "places" that vary in extent from little suburban lots to grounds calling for a troop of men to keep them in order. But I doubt if they enjoy these as much as did the grandfathers of the ante-war period, who grafted and pruned their own fruit, and spent long hours on their front door-steps discussing with their like-minded neighbors the latest number of the *Country Gentleman*.

Harrisburg, Pa. *M. L. Dock.*

Botanical Notes from Texas.—XIX.

UVALDE is a little city in the wilderness of Texas, about ninety miles west of San Antonio. It is the capital of a county of the same name. Their eponymist was the Mexican General Uvalde, who long ago won a decisive battle over the Comanche Indians in the cañon north-west of the city.

Near the city the Leona River has its principal sources in numerous springs issuing from its banks, soon becoming a large stream. A few miles below, the waters of the river are utilized for irrigating purposes, for Uvalde County is west of the limit of profitable agriculture without irrigation. About a mile above the city, at the foot of the Leona cañon, is a nearly broken-down cataract, over which the waters of a larger river once plunged. At the base of the old falls is a large pool of permanent water, filling the cavity washed out by the cataract. Uvaldians call it "the lake."

In a pleasant Elm-grove two miles or so below the city are the slight ruins of Fort Inge, which was built by the United States Government soon after the Mexican war, to afford the settlers of this region protection from Indian depredations. Near the ruins of the fort is a huge natural pile of rocks, known locally as "Fort Inge Mountain." The hill, which appears to be one of circumdenudation, is probably one hundred feet or more high above the level of the river. It may be a mile in circumference at the base. From its summit the surface geology of the country for miles around may be seen. The hill appears to be the highest point of a range, now nearly washed down, that once dammed the river at this point. The deposits of the large lake thus formed constitute the soil of the rich valley through which the Leona River now winds, and which needs only a greater rainfall or irrigation to make it a garden.

Uvalde County is the great honey-producing county of Texas, and its rocky places, where bees deposited their homes in

crevices, have sometimes literally flowed with honey. Our domestic bees have always moved westward just in advance of civilization, so that the Indians have a proverb, "When the bees come, the wise Indian moves on." There are several large "bee ranches" in this county, and one company manages nearly a thousand colonies. In the honey season of 1891 seven hundred colonies of bees collected 70,000 pounds of honey for their owners. Except at the time for dividing the colonies, the bees need little attention. The principal honey-yielding plants of this vicinity, blossoming in early spring, are species of Acacia, Mimosa and Pithecolobium. Other early-flowering shrubs, like Rhus microphylla, "Correoza," furnish abundance of pollen for the subsistence of the young bees in February or earlier, so that the old bees have their broods reared and all things in readiness to begin the work of collecting honey as soon as the plants begin to manufacture and store the nectar for them. In the height of the honey season a single household of bees will sometimes collect a hundred pounds of honey in two weeks. We now know that plants are the honey-producers, each plant manufacturing its own peculiar quality of honey, so that there may be as many grades as there are plants that produce it. White Clover-plants and Basswood-trees yield honey of light color and of exquisite flavor. Buckwheat and many other plants give a dark-colored honey, less pleasant to the taste. It is said that honey afforded by species of the Cactus family is always more or less acid. Many Composite plants give an unpalatable and bitter flavor, and their increased distribution in cultivated fields has nearly driven bee-farming out of the region where they grow.

The Leona River affords, in its ever-flowing waters and along its moist banks, an abundant flora whose species require constant presence of water, while the uplands around present the usual desert plants of the region already passed over, with the addition of a few more western species, Uvalde being the most western point from which these notes have been written. In some places along the river valley, where the roots of the trees and shrubs in their downward growth can reach perpetually moist soil, Live Oaks, Elms and other species attain nearly as large a size as they do anywhere in the state. A walk down the river revealed the presence of Bœhmeria cylindrica, four to six feet tall; plants of Helianthus Maximilianus ten feet high, and two or three handsome Asters bending their flower-laden branches over the river to catch the rising vapor before the dry air absorbed it. Tall, wand-like stems of Lobelia splendens stood near by, but their glory for the season had departed. This species is to south-western creek banks and springy places what L. cardinalis is farther north to similar localities. It is taller than its cousin, but not less handsome. In a still nook of the river the water is completely hid by a mantle of innumerable individuals of little Spirodela polyrrhiza. Close by is a little Bladderwort, Utricularia biflora, in flower, while in the rapids some Potamogeton, a true river lover, delights to swim. The low-spreading, small-flowered composite, Synedrella vialis, is common on grassy river-bars and in dumal pastures. It is abundant along the Leona and throughout south-western Texas.

In drier places the western Euphorbia barbellatta is abundant. Passiflora affinis is common along the Leona, climbing twenty feet or more. It is a south-western species, closely resembling P. lutea in habit, but with still smaller black fruit. The oak-leaved Stramonium, Datura quercifolia, grows in the streets of Uvalde. In richer and damper soils around the city D. metaloides is more commonly met than at any other place in Texas, as I have observed it. The large sweet-smelling flower that it produces has led to its cultivation in gardens both south and north. It is wild in Missouri to nearly the thirty-ninth parallel. A coarse, viscid-hairy, malodorous Abutilon abounds in cultivated lands over this portion of Texas, and farmers complain that its large strong roots impede the progress of their plows. On dry banks of the river, and commonly in southern Texas, Indigofera Lindheimeriana is to be seen. It is very distinct from our other Texas species of the genus, and makes an erect and nearly woody stem, becoming two to four feet tall. The numerous reddish flowers are borne on erect spikes; its pods turn downward and become bow-shaped as they ripen.

Near the base of Fort Inge Mountain, Perezia uncinata grows. It is a stemless plant, with handsome purple flowers, which makes it the most attractive of our Texas Perezias. Its specific name well describes its leaves. Ephedra pedunculata, a weak, straggling shrub, hardly able to stand without help, is not uncommon about the city. Perhaps it would be well to call it a vine; except in its climbing propensities it hardly differs from E. antisyphilitica, as I have seen it. The fruit is barely pedunculate. Texans call it Bamboo, and it is the Escobia of Mexicans. As browsing animals are very fond of both species, it is a stroke of good luck if one finds a specimen of either species in flower or in fruit, unless in unpastured enclosures.

The Nueces River, whose wide bed is now dry and dusty, is about six miles distant from Uvalde. The common Castor-oil plant, Ricinus communis, grows as a weed on its dry bed. In extreme southern Texas this plant becomes perennial and woody, really a tree. In damp places along the railway Perezia Wrightii is abundant. This species has succeeded in making itself so different from its Texas congeners that it is more difficult to learn that it is indeed a Perezia than, when that fact is established, to distinguish it from its congeners. It is a tall, usually strict-growing species, and very leafy to the flower-heads. The leaves are commonly oblong-ovate and clasping at the base. They are not at all runcinate, but are so spinosely and unequally dentate that a transition to a runcinate character could easily be made, if at any time this plant should deem fit to differentiate a runcinately leaved species from itself. Its flowers are white. Overtaking Perezia Wrightii at Uvalde, so much farther eastward than we had expected to meet it, we have now had an introduction, though in a rather sudden and informal way, to all known Texas representatives of Perezia agenus, which, with Gochmatia, Chaptalia and Trixis, also Texas genera, belong to the wholly southern series of Labiatifloræ in Compositæ, distinguished by the bilabiate, or divided corollas of the flowers of its species, plants which northern botanists at home never see.

Abounding on the gravelly bars of the Nueces River is a rosaceous plant known to botanists as Fallugia paradoxa. Its pinnate leaves, with several pairs of leaflets, white flowers closely like those of our common Blackberry, and its persistent styles, which greatly elongate as the fruits ripen, becoming feathery and of a purplish hue, give to the species a habit by which it may readily be known. Handsome in foliage, flowers and fruit, it is really a likable little shrub and worthy of a place in every southern garden. In walking along a public road on my way to the Leona, I noticed a half-starved but handsome plant growing by the way-side. Dry weather had so dwarfed it that it was hardly recognizable, but a closer look showed it to be Eupatorium Greggii. Its rather large blue flower-clusters are pretty, and its lobed leaves, with their divisions variously cut, make the plant unique among our species of Eupatorium. It would adorn any garden where it will grow.

Fort Inge Mountain, in a rainy season, is good botanizing ground, especially for handsome south-western Ferns. But they nearly all have succumbed to the dry weather. Only Pellæa flexuosa and a Cheilanthes were in a condition to be recognized. There are several other species of plants around Uvalde that may be new or rare to some of us, and others are here that we are glad to meet so far westward, but mention of these must be deferred.

Uvalde, Tex. *E. N. Plank.*

Foreign Correspondence.

London Letter.

RICHARDIA PENTLANDII.—Some time ago I hinted that tubers of this beautiful yellow Richardia had been received at Kew from Africa. One of the plants raised from them is now in flower and proves to be identical with the plant flowered at Pentland House by Mr. Whyte in 1892, and since exhibited by him to the admiration of every one who knows a good garden-plant when he sees it. The spathes are as large as those of the common Arum Lily, R. Africana, and of the richest, clearest yellow color, the yellow of the common Sunflower. Mr. Whyte did not know the history of his plant beyond that it had been given to him by a friend. The history of the Kew plants is, briefly: In 1891 Mr. Galpin, of South Africa, brought to Kew the tubers of a yellow Richardia which had been presented to him by a gentleman living in the Transvaal, who obtained them from a soldier who got them from a Basuto chief while on active service. A figure of the Kew plant has been prepared for the *Botanical Magazine.*

LILACS have been finer out-of-doors this year than I ever remember to have seen them. There are many beautiful varieties now, most of which have been bred by Continental nurserymen, especially Monsieur Lemoine, of Nancy. Last week two of the new ones were shown at the meeting of the Royal Horticultural Society, where they were gener-

ally admired and were awarded certificates. They were Madame Lemoine, a double white variety of extraordinary vigor and purity, the trusses suggesting well-grown stocks. The other was named Louis Späth. This has large single flowers of good substance, and packed in very large trusses, the color being rich blue-purple with a suggestion of deep crimson in the buds. It is by far the finest of the dark varieties of Lilac hitherto raised. It was exhibited by Mr. A. Waterer, of Knap Hill, who thinks very highly of it.

Tulips.—A gorgeous display of color has prevailed this spring on several of the most conspicuous lawns and walks at Kew, in large beds full of such brilliant sorts of Tulips as Tulipa elegans, Picotee, macrospeila, fulgens, Gesneriana and Darwin. The value of large masses of color, such as these make in May, is exceptional when they are placed in positions where they tell with good effect. The use of Tulips, Daffodils, Crocuses, Bluebells (Scilla), Snowdrops and such-like easily managed, free-flowering, effective spring-flowering bulbs is much more general in good gardens in this country than it used to be. Their value is, no doubt, due in some measure to the fact that they come with a rush and do not stay too long. The pleasures of the garden are greatly enhanced, in my opinion, by following what may be called a kaleidoscopic system of grouping.

Tacca cristata is a handsome stove-plant, which is rarely seen or heard of outside botanical gardens. A good specimen of it is now in flower in a stove at Kew, where its extraordinary looking heads are a source of much speculation on the part of visitors. From a fleshy root-stock spring long-stalked, lanceolate, dark green and purple leaves, not unlike those of Eucharis, but larger and more lanceolate. The scapes are nearly two feet long, and each one is terminated by a cluster of small roundish flowers and long filaments, springing from the base of four large conspicuous spathe-like bracts. The flowers last about a fortnight. Grown in a hot moist atmosphere, and potted in a rich open soil, this plant soon forms a handsome specimen. I have seen one with over twenty large flower-heads. It is a native of Malaya. Another name for it is Ataccia cristata. The order Taccaceæ is closely allied to the Amaryllids.

Gloxinera Brilliant.—Under this name Messrs. J. Veitch & Sons exhibited last week a plant which they had raised by crossing Gesnera pyramidalis with a Gloxinia called Radiance, and claim that it is a bigeneric hybrid. The plant itself is like an ordinary Gloxinia, with somewhat shorter leaves with a metallic hue, and tubular rose and scarlet flowers set horizontally and singly on stalks. Before we can be certain of its parentage, or even of the value of the generic name given to this plant, we must know whether its parents are what they are called. The Gloxinia of gardens is not a Gloxinia at all, but a Sinningia, namely, S. speciosa. There is no such species as Gesnera pyramidalis, and many of the plants called Gesneras in gardens belong to other genera. The whole order as represented in cultivation is in such a state of confusion that we may well hesitate before adding to it by creating another name.

Cypripedium macrochilum giganteum.—This is a handsome hybrid which Messrs. J. Veitch & Sons have raised from C. grande and C. caudatum Lindeni, and to which the Royal Horticultural Society have awarded a first-class certificate. Its leaves are as fine as those of C. grande, and the flowers are as large, but they have the long tail-like petals of C. caudatum and an immense labellum. Their color is green, with a tinge of rose on the petals, the lip white inside, with a spotted margin, the outside of the pouch being white and green, suffused with crimson. C. macrochilum was raised by the same firm in 1891 from C. longifolium and C. caudatum Lindeni; this new variety is superior from the fact that C. grande, one of the handsomest of the Selenipedium hybrids, has been used instead of C. longifolium, a somewhat weedy species.

Disa Langleyensis is a new hybrid of Veitchian origin, its parents being D. racemosa and D. tripetaloides. It was shown in flower last week, and obtained a first-class certificate. The flowers are intermediate in size, and their color is rosy lilac, with veins of a deeper shade and a few red spots. There were about a dozen flowers on each scape, and the whole plant bore an attractive, healthy look which augurs well for its future as a garden Orchid. The Disas of this section are rapidly coming to the front; they are not only exceptionally easy to grow, and require no artificial heat, but they flower freely and the flowers are handsome and lasting.

Microstylis Scottii has been introduced in quantity lately from Penang. It was shown last week, and obtained a certificate on account of the rich metallic brown and yellow of its foliage. There are several large panfuls of it at Kew, where it has been cultivated several years.

Coryanthes Wolfii, described by Lehmann some years ago, was first flowered by Mr. Moore at Glasnevin last year, who sent it in flower to the last meeting of the Royal Horticultural Society, where a certificate was awarded it. It differs from all other species of this remarkable genus in having the helmet-like lip almost solid instead of hollow, as is usual. The flowers are large, orange-colored, with brownish spots, and they are as attractive in their queer shape as in color and fragrance. The flowering of Coryanthes in this country is not of frequent occurrence. Newly imported plants of a new species of Coryanthes were sold by auction last week, the venders being Messrs. F. Sander & Co. The picture of the flowers, exhibited at the same time, represents it as being truly wonderful in the form, size and colors of its flowers. Collectors, however, are not always good artists.

Some "Rare" Orchids.—The tricks of venders and collectors of Orchids in the direction of bulling the market have been exposed lately by the arrival of enormous quantities of the same sorts as were a short time ago declared to be cleared out by the first collector. I am afraid to say how many thousands of newly imported plants of Cypripedium Charlesworthii and Cattleya labiata vera I have seen lately in English nurseries. Recently, too, I heard of the arrival of a consignment of plants of Eulophiella Elizabethæ, notwithstanding the statement published some time ago that no more plants of it could possibly be had. Possibly these statements are believed to be true when made by those who make them; still, they are decidedly misleading and calculated to bring the trade into disrepute. Experienced buyers are not easily deceived, but, no doubt, many of the younger ones are imposed upon by false and misleading statements.

London. *W. Watson.*

Plant Notes.

Pyrus betulifolia.

THIS handsome hardy tree was raised here from seed collected in the mountains of northern China and sent in 1882 by the Russian botanist, Bretschneider, to the Arnold Arboretum. It was first made known* by Bunge, a German botanist who, in 1831, accompanied the Russian commission which traveled overland from St. Petersburg to Peking. Decaisne figured the leaves and young fruit in the first volume of the *Jardin Fruitier du Muséum*, published in 1871–72; and in 1879 it was figured and described by Carrière in the *Revue Horticole* from specimens probably produced in the Jardin des Plantes.†

Pyrus betulifolia (see figure on page 225 of this issue), as it now appears in Massachusetts gardens, is a tree fifteen to eighteen feet high, with a short, well formed trunk covered with dark, slightly furrowed, scaly bark, and a head of slender, graceful, spreading, more or less pendulous, branches which sweep the ground in a circle fully forty feet in circumference. The young branchlets, when they first

* *Enum. Pl. Chin. Bor.*, 27.—Walpers, *Rep.* ii., 53.—Maximowicz, *Mél. Biol.*, ix., 169.

† *Rev. Hort.*, 1879, 318, f. 68, 69.

appear, are coated with hoary tomentum, which clothes the under surface of the unfolding leaves, their petioles and the stalks and branches of the inflorescence. The leaves are broadly ovate, coarsely glandular-serrate, narrowed into long apical points and rounded or abruptly wedge-shaped at the base; they are covered at first, on the upper surface, with pale, silvery hairs, and ultimately they are thick, subcoriaceous, green, very lustrous above, coated with pale tomentum below, an inch and a half to two inches long and about an inch wide, with slender petioles an inch and a half to two inches in length; in the autumn they fall without any marked change of color. The flowers are produced in the greatest profusion in early May, when the leaves are about half-grown, on short, lateral, spur-like, branchlets in stout, many-flowered, leafy racemes, and are borne on

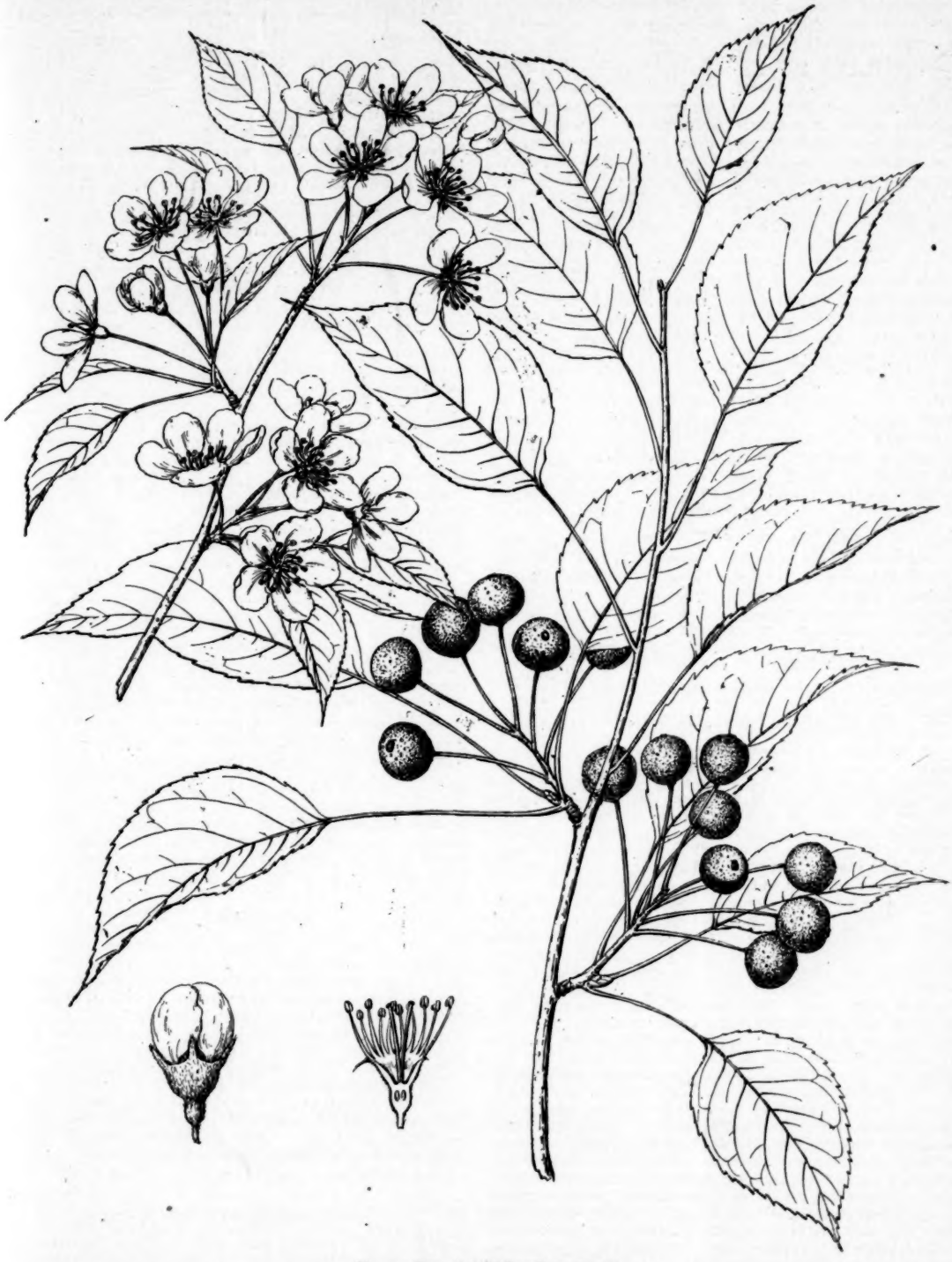

Fig. 39.—Pyrus betulifolia.—See page 224.

slender, rigid, hairy pedicels nearly an inch in length and furnished near the middle with a linear, scarious, caducous bractlet. The calyx-tube is globose, tomentose, and abruptly enlarged above into a spreading, tomentose, deciduous limb, which is five-lobed with small, remote, nearly triangular lobes coated on the inner surface with pale hairs and furnished near the apex with minute red glands. The corolla is two-thirds of an inch across when expanded, with pure white petals rounded at the apex, abruptly contracted at the base into short claws and about an eighth of an inch broad. The stamens are composed of glabrous, white, incurved filaments and bright red anthers, and are rather longer than the three spreading styles crowned with capitate stigmas. The fruit is subglobose, marked at the apex with the scar left by the falling of the calyx-limb, russet brown, covered with small pale dots, and about a third of an inch in diameter; produced in great profusion, it ripens in October and hangs on the trees until the following spring, growing soft and black after midwinter.

In Peking, Dr. Bretschneider tells us,* Pyrus betulifolia is "much cultivated in gardens for its beautiful flowers, which in April appear on the tree in great profusion, and for its little brown fruit of the size of a small cherry, which is eaten by the Chinese; taste not unpleasant."

Its hardiness and rapid growth, the fact that it flowers while very young (seedling plants flowered in the Arboretum when only six years old), and the pale color of the leaves, which shimmer on their long stalks with the slightest breath of wind, make Pyrus betulifolia a most distinct and desirable ornamental plant in the northern states. Less showy, certainly, than the common Pear-tree when in flower, the profusion in which the flowers are produced, and their pleasant contrast of color with the young leaves, make it a most desirable addition to our shrubberies. That it may appear to its best advantage, Pyrus betulifolia should be planted in deep well-manured soil, and sufficient space should be given it in which to spread, without interference, its long graceful branches.

C. S. S.

* *Botanicon Sinicum*, ii., 304.

Cultural Department.

Notes on Trees and Shrubs.

THE flowers of the American Red Mulberry, Morus rubra, are beginning to open in some of the later developed spikes, during the last days of May, two or three weeks after pollen was matured in the earliest blossoms. There is nothing conspicuous or calculated to attract attention in the flowers of Mulberries, but some peculiarities about them are interesting. They are usually described as dicœcious or moncœcious.

The White Mulberry, Morus alba, of the Orient, and now common in eastern American gardens, appears to have a tendency to bear either staminate or pistillate flowers on separate plants; but our native Red Mulberry commonly produces its sterile and fertile flowers in separate spikes more or less evenly distributed among the branches of the same tree. Sometimes a large limb will bear all male flowers and another large branch exclusively female flowers, or both kinds may appear side by side on the same branchlet. Occasionally both staminate and pistillate flowers occur in the same spike, but this appears unusual and more likely to be found on the White than on the Red Mulberry. Very often apparently perfect flowers occur, bearing stamens and well-developed stigmas and ovaries. The flowers in the spike are arranged in two broad ranks, which gives the cluster a somewhat flattened appearance. Except for its calyx lobes, which form the fleshy part of the fruit when ripe, there is nothing to be remarked about the pistillate flower of the Mulberry, the most conspicuous part of which consists of the two short recurved styles and stigmatic surfaces, similar to those seen in the allied Elm and Celtis. The staminate flower essentially consists of four stamens which are incurved in the bud. As the flower-bud arrives at the period when the blossom is ready to fully expand, the filaments lengthen so that they form four little loop-like projections, while the four anthers are still held touching each other around the centre. At perfect maturity the anthers are suddenly released, the filaments straighten with a jerk, and the pollen is scattered from little vertical slits which are simultaneously opened in the two-celled anthers. If the filaments and anthers are disturbed when nearly mature, the act of expansion may be distinctly observed, for as soon as the anther is released the filament flies back and a little cloud of white pollen is thrown into the air.

The Red Mulberry is probably not indigenous in eastern Massachusetts, but it is frequently found in gardens and occasionally by a road-side, where it has probably escaped from cultivation. It is said to be native in the western part of the state and thence more common west and south. In cultivation here it is usually a low, broad-spreading tree with nearly horizontal branches, and at a distance, when leafless, it might be mistaken for a Hawthorn or flat-topped Apple-tree. Farther south it often attains a height of sixty or seventy feet. A specimen in these grounds, planted many years before the establishment of the Arboretum, now has a trunk more than twenty inches in diameter, which branches into three large limbs at three feet from the ground, and forms a tree twenty-five feet high, spreading over a diameter of thirty-five feet. Another tree, grown from seed collected in Virginia and sown in 1874, was permanently set out when a seedling on poor gravelly soil, which has ever since been covered with grass; it now has a stem two feet in circumference or eight inches in diameter. The trunk divides into two or three sections at three or four feet from the ground, and the tree is over twenty feet in height and spreads twenty-five feet across. The almost black fruit when fully ripe averages nearly an inch in length, and has a pleasant slightly acid flavor which is vastly more palatable than the mawkish sweet of the average fruit of the White Mulberry. The fruit of the ordinary forms of the Red Mulberry is much liked by many people, and locally it is sometimes called the Black Mulberry. This name, however, is misleading, for the true Black Mulberry, Morus nigra, of the Old World, is not hardy in this climate. This is unfortunate, as its fruit has been generally considered much finer and more palatable than that of any other species in general cultivation.

Several horticultural varieties of the Red Mulberry have been named by cultivators. They are chiefly grown in the south, where the Stubbs Mulberry is said to produce immense quantities of pleasant-flavored fruit fully two inches long and half an inch thick, and the Hicks Mulberry bears a large sweet fruit, valuable for fattening hogs and poultry, for which purpose it has been planted by some farmers. In this vicinity the first fruit is matured about the first week in July, and it continues to ripen during several weeks, but in the south it is said that the best varieties continue to mature an abundance of fruit for two or three months.

There are some forms of the White Mulberry which have dark-colored fruits, so that the plant has sometimes received the name of Black Mulberry. But the White and Red Mulberries are the only two species usually seen in northern gardens, and they may be readily distinguished, for the leaves of the White Mulberry are smooth and shining on both surfaces, while those of the Red Mulberry are rough above and densely covered by a soft gray pubescence or down on the lower side. The leaves of the Red Mulberry are also usually larger. In both species they are more or less heart-shaped, and the margins have blunt or rounded teeth. Vigorous growths are sometimes deeply lobed, the hollows or sinuses being large and without serrations or teeth. In the variety of the White Mulberry, known as the Tartarian or Russian, the leaves are nearly always lobed and often very much so. In this climate it is probable that the White Mulberry will always be a larger tree than the Red. Wherever a Mulberry-tree is a desideratum in a small garden the native Red Mulberry would probably give most satisfaction on account of the more palatable quality of its fruit, but if it is desired to feed silk-worms, Morus alba should be selected. The Mulberries appear to be exempt from the attacks of many of the insect pests which affect other shade and fruit trees.

Arnold Arboretum. *J. G. Jack.*

Seasonable Garden Flowers.

ONE of the earliest and best of the composite family to flower in the early summer is Helenium Hoopesii, a true perennial, a native of the western states from Montana to New Mexico. It is the best garden-plant of the genus, H. Bolanderi ranking next, and after it H. autumnale, a somewhat common species here in the eastern states, and a useful autumn-flowering plant.

Helenium Hoopesii is now coming into bloom, and makes

a fine show, besides being a very useful plant for cutting and for house-decoration at this season. Seeds are freely produced in favorable seasons, and the plant is also readily propagated by division of the strong root-stock. The only drawback to its cultivation is the frequent attacks of white aphis on the roots. If, as often happens, the plant looks unhappy, and an examination of the roots reveals the fact that insects are doing the mischief, it should be transplanted into fresh soil after the roots have been washed in an insecticide.

Cypripedium pubescens is in bloom again on the shady side of the Rhododendron-bed, where it has flowered for the past four years. It is doing better this year than ever before, in larger clumps, showing that it will increase in cultivation under proper conditions. C. spectabile is thrifty, also, in a similar situation. In a rich vegetable-mold, with shade and moisture, these beautiful hardy Orchids can be successfully grown in our gardens.

In the Rhododendron-bed the Lilies are also coming up strong. Every kind has appeared, even the newly planted Lilium giganteum and L. cordifolium; though these will not flower this year, it is gratifying to know that they have taken kindly to their new conditions. L. auratum platyphyllum was sent to me as a variety superior to the old L. auratum and as a Lily that would increase year after year in the garden without any special care; all of this is true and worth making known, for most of us have had vexatious experiences with L. auratum. Bulbs of L. auratum are so cheap that it consoles one somewhat for the loss of them after the first flowering, but it is still unexplained why they cannot be grown here during successive seasons as they are in Japan, and as most other kinds of Lilies are grown in this country.

South Lancaster, Mass. *E. O. Orpet.*

Plants in Flower.

THE Spanish Irises now in flower form quite the most brilliantly colored group of the family, though the individual flowers are not large, and, while the plants are common, they are not nearly well enough known. If the bulbs are grown in a comparatively dry place they thrive without much care, though it is well to separate the offsets every two or three years. The leaves appear above the ground in late fall, and it is necessary to plant the bulbs early. Iris pallida is the stateliest Iris of those now in flower, the variety Dalmatica having the largest flowers. Well-grown plants of these Irises, with flowering stems three or even four feet high, spring from clustering, very broad, stiff, glaucous leaves, and have an air of distinction. Personally, I prefer some of the hybrids, not far removed, which have the same habit with flowers of a lighter tint of lilac. One of these, Madame Almira, is quite perfect in this way and has the dainty elder-like fragrance of the parent. I. Monnieri is characterized by another form of stateliness, with tall leaves, very slightly glaucous, yellow flowers with narrow claws, small falls and short standards. I. graminea is a dwarfer Iris with small flowers of a purplish red effect; it may be classed with I. squalens and I. sambucina as unattractive garden-plants. From several sources of supply I have had Irises, called I. orientalis, which, according to Mr. Baker's classification, is the typical I. Sibirica; the former name is now given to the I. orientalis of Miller, usually grown in gardens as I. gigantea. The I. Sibirica, var. orientalis, lately described, is usually known in nurseries as I. sanguinea and sometimes as I. hæmatophylla. These little confusions of the florist and the gardener enable the careless cultivator to acquire two or three collections while seeking for one. I. Sibirica, var. orientalis, is a fine variety, with rich deep blue-purple flowers, copiously veined on the claw, and with broad falls and narrow standards, both slightly frilled. The spathe valves are dark brown, and the budding flowers are handsome; it is a fine garden variety in all respects. Iris Ciengialti, var. Leppio, is taller than the type, and has dark purple flowers, with large standards and falls, and, I think, is not as pretty as the type. This is also the flowering time of our flag, I. versicolor, which seems equally at home in the water and in a dry border.

We have had a week of wet weather, high winds and a temperature necessitating fires in the house, yet a day or two of sunshine has removed all traces of the storm. The Oriental Poppies commenced to flaunt their great scarlet cups at once. There is considerable difference in the coloring of these flowers, and by careful selection the differences, no doubt, could be made yet more distinct. The first Oriental Poppy to appear with me is the old-rose-colored one known as Blush Queen, though it is in an exposed position. The first scarlet one to open has no black spots on the petals, and a small cluster of stamens. This is a chance seedling, self-sown, and near it another rose-flowered form is opening; the ordinary forms are still in the bud. The deep coloring of the Tulip Poppy quite pales the Oriental Poppy, which usually dominates everything else in the garden at this season.

With the exception of a stray Tea Rose, the Roses of this week are all species with single or semi-double flowers, the latter being Mr. Dawson's hybrids. The Dawson Rose furnishes beautiful sprays of charming pink flowers in great clusters. The white-flowered variety has a rather stiffer habit. The fragrant single flowers of Rosa rugosa, the daintier flowers of the Burnet Rose and the delicate pink flowers of a Polyanthus Rose appeal to all who see them. It is always interesting to note the flowers in a garden which excite special interest and sympathy. They are often not the handsomest or the most complex, or even the rarest flowers, neither are they always familiar ones, but, like some men and women, some flowers have an occult attraction not always easy to define. With some experience, I think a garden could be arranged which would be a source of satisfying delight to almost every visitor.

Among the showier plants now in flower are the first of the hardy Gladioli, and G. segetum is showing its vivid purplish red flowers. The Pyrethrums are displaying their bright flowers. With these showy flowers are growing many dainty little plants, making charming mats, dotted with delightful little flowers; but these deserve more than slight mention.

Elizabeth, N. J. *J. N. Gerard.*

Raising Ferns from Spores.

THE secret of success in raising Ferns from spores is to have a soil in which the spores will germinate without being overgrown with moss. As is well known, Fern-spores germinate readily on the surface of bricks and stones, where there is little or no plant-food, provided they have sufficient moisture. The best soil is obtained by baking ordinary soil over a fire. All germs of moss are thus killed, and the seedling Ferns are not in danger of being choked. In preparing pans in which to sow the spores, about two inches of broken crocks should be placed in the bottom and covered with a thin layer of moss; over this there should be about an inch of ordinary potting-soil, with half an inch of baked soil on top. After the soil is well watered the spores should be sown thinly on the surface, without any covering. Thick sowing is sure to cause damping. The pans should be plunged in a bed of sand, with gentle bottom-heat, and covered with panes of glass cut to fit them. As the moisture will condense on the inside of the glass, the panes should be turned every day to prevent damping. Water should never be applied on the surface of the pans, but the sand in which they are plunged should always be kept damp, so that sufficient moisture may be absorbed from it.

When the plants begin to throw up fronds they should be lifted in small clumps and placed about two inches apart on the surface of soil composed of two parts loam, two parts leaf-mold and one of sand. The boxes should be covered with glass for a few days only, until the plants take hold of the new soil. The plants must be well shaded from the sun all the time. When they are large enough to pot, they should first be planted in two-inch size and shifted on when they require more soil. The addition of a little ground bone will be found a benefit to the potting-soil.

New Dorp, N. Y. *W. Scott.*

The Cultivation of Roses.

THE best time for replanting the Rose-house for next winter is now at hand, for, if a steady supply of flowers is desired, it is necessary to replant the forcing-house as soon as roses can be cut from outdoor beds. With the proper selection of varieties, quite a limited garden will produce a regular rotation of cut roses during the summer.

For outdoor cultivation only strong plants should be selected, for, while much pleasure is derived from watching small plants develop into good flowering specimens, valuable time is lost when the old plants are kept in the forcing-house until late in the season. Outdoor planting in the middle states is completed before the 1st of June. Among the best varieties for the garden are La France, this variety blooming more or less from June to November; Marie Guillot, Marie Van Houtte, Papa Gontier, Clothilde Soupert and Perle des Jardins. From a combination bed of these admirable sorts roses can be cut continuously throughout the season.

In the selection of Roses to be used under glass the mistake

is frequently made of planting too many varieties in one house. This usually results in the comparative failure of several sorts, for exactly similar treatment is not adapted to all kinds, nor will the same soil give the best results for all varieties. Meteor and American Beauty are not likely to do their best when grown in a night temperature of fifty-six to fifty-eight degrees, in which Souvenir d'un Ami and Niphetos luxuriate. A few suitable sorts should be selected for each house, when success will be more certain. Cleanliness in the Rose-house cannot be too strongly urged, for with high cultivation there seems to be a corresponding development of various diseases, mostly of fungoid origin, and likely to yield to prompt and intelligent treatment. The interior of the house should have a coat of paint every two years, and every season, previous to refilling, the benches should be thoroughly coated with crude oil; this acts both as a preservative and insecticide, and while the odor is disagreeable for a time, the benefits are decided.

For planting in shallow benches I prefer strong plants from three-inch pots; these are more convenient to use than plants from larger pots, and, if healthy, they will give equally satisfactory results. Smaller plants will also do well if skillfully handled, but these naturally have less strength to depend upon if they receive a check after replanting. The opening of side ventilators on a level with the benches in which the Roses are planted has frequently been tested and discussed, but the weight of evidence seems to be against this practice. Attacks of mildew are much more prevalent under such conditions than when ventilation is confined to the openings at the top of the house, where air can be admitted freely, without so much direct draught on the plants. Very light shading over the newly planted Roses is beneficial to them, if it is not allowed to remain on the glass too long, and relieves the necessity for frequent watering of the young stock. A heavy shading tends to make the growth weak and soft.

Among the newer varieties that have rapidly attained popularity are Madame Testout and Kaiserin Augusta Victoria, both of which are strong growers and give flowers of large size. Christine de Noue has also been highly recommended in some quarters; the buds are especially desirable and bear some resemblance to Papa Gontier, both in coloring and shape.

Holmesburg, Pa. *W. H. Taplin.*

Correspondence.

A California Garden.

To the Editor of Garden and Forest:

Sir,—An unexpected rain-storm in the third week of May has set every farmer and gardener in this valley to work. The air is cool, and gentle sea-breezes come in across the Coast-range, and that peculiar California season that is partly spring and partly summer, and that obeys no rules of the almanac, is upon us in its full splendor. The yellow fruits of the Loquat, Eriobotrya Japonica, are ripening in the tree-tops, and the Cherry avenue is reddening in the sun. In the vegetable-garden are new potatoes and Juno and Sapphire peas ready to be gathered. There are more strawberries than the family can use, and raspberries are beginning to ripen.

It is the season when all gardening work will prosper, whatever one's choice or whim. There is always water to irrigate with, enough for a few acres at least, and whenever the soil becomes too dry for transplanting or seed-sowing, it can be made wet in a few hours. At times, therefore, we are doing December or February work, and at other times pruning away the surplus of bloom or heading back plants that are running to seed. A stranger would certainly think it a September garden. For example, the Eschscholtzia bed, some thirty feet square, was seeded several years ago, and is now well established. When the first bloom is over, the plants are cut down with a scythe, the water turned on, and in a few weeks there is again a flaming sheet of flowers. There are additions to the wild garden every year. A bulb or flowering plant taken from the fields or cañons seldom amounts to anything the first year, but if given half a chance it is soon contesting with the garden-plants for space for its progeny. A beautiful large-flowered Wild Clover that I started from one seed in a pot two years ago is now well naturalized in the gravel of the road-side, and it would be easy to give a score of such instances.

Roses have flowered luxuriantly this year, and they are still magnificent, though lessening in quantity as the time approaches for their midsummer rest. Under our treatment we have roses ten months of the year, and two seasons of very heavy bloom. In broad terms, nearly every Rose does well here, though a few mildew if neglected. One Rose-grower in this neighborhood a few days ago cut fifty thousand choice roses for the Rose Carnival of the Midwinter Fair. A plant of Maréchal Niel, which has reached the top of a twelve-foot trellis in this garden, has already produced three thousand choice buds this season. Madame de Watteville is a wonderful little Rose, somewhat hard to grow in perfection, but it well repays extra care; budded on Papa Gontier, or some such stout grower, it is less likely to mildew, and produces better buds.

Calceolaria rugosa and all the hardier sorts of Calceolarias are entirely at home here in a sheltered border, and so are many of the popular greenhouse and florists' flowers. When any plant does poorly under glass the rule in California is to bed it out and watch for improvement. Glass is useful, to be sure, but most amateurs value it chiefly for propagating purposes. The open-ground sowing of seeds that was easy and, indeed, almost universal a quarter of a century ago, when there were no insect pests and no slugs here, is no longer practicable in every garden. Seed pans or boxes are preferred at all times of the year, and everything except a few patches of self-sown annuals is transplanted into well-prepared soil. It is a great saving of labor, as less hoeing and weeding have thus to be done.

The work of keeping up a garden is probably less in these Coast-range valleys of California than almost anywhere else. Amateur gardening is easy here, and very little skill or knowledge is required to produce beautiful effects. There is not a single professional gardener employed in this region, although every house-lot has its flower-garden. The Portuguese and Italian laborers are handy in such matters, and they do good work under directions. California florists learned long ago, however, that there is little or no money for them in stocks of bedding-plants. "If I sell a ten-cent Geranium to a farmer's wife," said a commercial grower to me, "it is over the whole valley in less than a year, and I never sell another. Winters that would kill off all the soft-wooded plants would give our business a chance."

Niles, Calif. *Charles H. Shinn.*

The Forest.

Mixed Oak and Beech Forests of the Spessart.—II.

VALUE OF THE OAK.

In the Spessart, as throughout Germany, the most valuable tree is the Oak. The Beech and the Hornbeam are useful companions; nay, they may be said to be necessary for the good development of the Oak, but the value of their produce is small. An Oak-tree, twenty-four inches in diameter, breast-high, and 105 feet high, will yield five cubic metres, or 176 cubic feet, of salable wood, including pieces down to three inches in diameter. If sound, it will sell as follows: Logs, fifty-five per cent. or 2.75 cubic metres at fifty marks a cubic metre, 137.50 marks. Small timber, chiefly for wine-casks, twenty per cent. or 1. cubic metre at fifteen marks. Firewood, twenty-five per cent. or 1.25 cubic metres at 3.50 marks, 4.38 marks. The whole worth 156.88 marks.

A Beech-tree of the same size will sell as follows: Timber, thirty per cent. for thirty marks; firewood, seventy per cent. for 17.50 marks, or 47.50 marks altogether. The timber of the Hornbeam sometimes fetches a little more than beech, but the tree grows more slowly and never attains the same size as the Beech.

Thus, assuming a dollar as equivalent to four marks, an Oak-tree of the size mentioned would sell for thirty-nine dollars, and a Beech-tree for twelve dollars. It must, however, be borne in mind that, while an Oak-tree of that size would be 300 years old, a Beech-tree in the same locality would attain the same dimensions in 180 years. Many of the Oak-trees in the Spessart are 400 years old and upward, and have a much larger diameter, often containing twice the volume of wood. The price of Oak timber increases considerably with the diameter of the tree, large logs not rarely fetching 100 marks per cubic metre. Such trees would be worth $125 to $150 apiece, or even more. Of Oaks containing five cubic metres, on good soil and under favorable circumstances, sixty trees might stand on one acre. The outturn of an acre at the fall, therefore, would be worth sixty by thirty-nine, or $2,340, while the wood of an acre

stocked with Beech of the same size would only be worth $720. This result, however, would be attained in 180 years, whereas the Oak wood would be 300 years old.

These figures will make it clear that of the trees indigenous in the Spessart, the Beech far preponderates, its growth is more vigorous and faster than that of the Oak. Hence, in working the forest, the tendency will always be for the Beech to gain the upper hand and for the Oak to disappear. This will explain sufficiently why it is necessary to make special efforts to frame the plan of working the forest, so as gradually to increase the proportion of Oak in it.

PRESENT GROWING STOCK OF OLD OAK-TREES.

From time immemorial the Spessart has been one of the principal sources of large Oak timber in western Germany. The rich wine-producing districts in the valleys of the Rhine and the Main have chiefly depended upon these forests for their wine-casks. And for boat-building and house-building the Spessart has always furnished large quantities of Oak. In spite of these constant and heavy demands, large numbers of old Oak-trees, from 240 to 500 years of age, still remain standing. These old trees are mostly found scattered in the old Beech-woods, but there are some areas where the Oak forms a large proportion of the growing stock. The most remarkable of these is situated in the forest-range of Rohrbrunn, on the north-west slope of the Geiersberg, which, as already mentioned, is the highest point of this mountain-range. Here there are upward of 1,000 acres in one block, stocked with Oak 240 to 245 years old, at the rate of seventy trees per acre, the trees eighteen to twenty inches in diameter and ninety-five feet high. Among the Oak, here and there, are a few Beech-trees, and the ground is everywhere covered with an underwood of Beech, partly natural, partly planted. These Oaks date from the middle of the seventeenth century; they sprung up soon after the thirty-years' war (1618–1648), and some of the mother trees are still left, giants 500 years old, with a diameter of forty inches. This is not rapid growth, but the elevation is high, 1,300 to 1,700 feet, and the soil on this slope is not very deep and not very rich.

That this is slow growth will be understood from the following figures: A survey made in August, 1891, of a sample area, six-tenths of an acre, selected as a good average, gave ninety-one trees per acre, mean height ninety-five feet, tallest tree 105 feet, and 8,087 cubic feet, equal to 97,000 superficial feet of timber—oak, pure, it will be remembered, with an underwood of Beech, which, of course, was not included in the survey, at an elevation of 1,500 feet. In Normandy, at a low elevation, on rich soil, in a mild and uniformly moist climate, there is a wood of sixty-eight acres, in the forest-range of Lyons-la-Forêt, consisting of Beech, sixty-five per cent.; Oak and Hornbeam, thirty per cent., and other species, five per cent.; sixty-eight trees per acre; mean age, 160 years, with some old standards up to 240 years old; mean height, 147 feet; tallest tree, 164 feet; volume of timber, 14,300 cubic feet, equal to 168,000 feet, board measure.

Thus, 160 years in Normandy have produced much taller trees, and nearly twice the volume of timber per acre, than 240 years in the Spessart. The explanation is that Beech grows faster than Oak, as previously explained, and that soil and climate are much more favorable. These are forests in Europe in about fifty degrees of north latitude. They are beaten out of sight by the exceedingly mild and moist climate on the western slope of the Coast-range, in California, at about thirty-eight degrees of north latitude. Here it is reported that some Redwood-forests yield 250,000 or even 500,000 feet, board measure, per acre, and this statement does not seem incredible, for, in his book on the forests of North America, Dr. Heinrich Mayr gives an account of a sample area examined by him, with fifty-six trees per acre, mean height 275 feet, containing 190,070 cubic feet, or 2,280,840 feet, board measure. However, the age of this wood was 700 years. It would be a delightful task to manage forests with such wonderful powers of timber production. One of the first points to make for would be to determine the earliest age at which the Redwood produces marketable timber of really good quality. But even if a rotation of, say, 200 years were found to be necessary, the rent per acre of such forests, managed on conservancy principles, would be very high.

The history of this fine and valuable German forest may be understood if we examine the forest on the eastern slope of the Geierskopf near the top, which consists entirely of an open wood of old Oak-trees, over 400 years of age, with a few Beech. It is generally assumed, and this assumption is borne out by such old records as exist, that 400 to 500 years ago the higher portions of the Spessart were stocked with pure, or nearly pure, Oak-woods. Now, it is one of the peculiar features of pure Oak-woods, a peculiarity which that tree shares with the Scotch Pine, the Larch and other trees, which, while young, demand much light and are impatient of shade; that as the wood grows older it gradually gets thin and open, and the canopy of its foliage no longer completely shades the ground. An Oak-wood raised by broadcast sowing or the result of self-sown seedlings will at the age of twenty years, if fully stocked, have about 1,200 stems per acre; when 100 years old, 250 to 300 only will be left, and of them at the age of 250 years, seventy only will be left on the ground. The trees which disappear during the long life of an Oak-wood are overtopped and gradually die out. In the higher portions of the Spessart it is probable that, besides the natural tendency of pure Oak-woods to get thin and open when old, other factors were at work in the same direction. These woods were doubtless used in summer as the high level grazing-grounds by the rich villages which studded the fertile open country. The grass under the partial shelter of scattered Oak-trees is excellent, and the herdsmen doubtless meant, by fire or otherwise, to get rid of a portion of the trees. The result has been that these pasture-grounds on the higher ranges of the Spessart were like a gigantic park, studded with old Oak-trees, forming open woods, the ground under the trees being clothed with a dense matting of grass. During the thirty-years' war, however, these villages in the open country of Franconia were repeatedly devastated, and the cattle killed or driven away; the young Oak, therefore, which until then had been kept down by the cattle, took advantage of the opportunity, and on the occurrence of the first heavy Oak-mast dense thickets of Oak sprang up and covered the ground. Oak-masts do not occur frequently in the Spessart. During the fifty years from 1820 to 1870 there have only been nine heavy seed years. In spring, when the tree is in blossom, night frosts frequently prevent the fertilization of the female flowers or kill the young fruit. Caterpillars, also, not rarely destroy both young leaves and flower-buds. A good Oak-mast is naturally an event of the greatest importance in the Spessart, and it generally occurs once in five or six years. The acorns, being heavy, do not fall far from the tree, but in a good seed year the ground near the mother-trees is covered with acorns, and the nearly pure Oak-woods, 240 to 245 years old, most likely owe their origin to a heavy Oak-mast which occurred soon after the close of the thirty-years' war, when there were no cattle left to eat and destroy the young seedlings.

In the forest-range of Rothenbuch, which adjoins that of Rohrbrunn on the north, may be mentioned two smaller areas stocked with magnificent old woods of mixed Oak and Beech, one being the compartments Zuber and Denkstein, of 110 acres, where some 1,100 huge Oaks, 375 years old, are mixed with a large number of younger Beeches 145 years old. The Oaks are 115 feet high, with tall, clean boles, the result of having grown up closely pressed by the Beech. They stand on gentle slopes with southerly aspect on the north side of the Hafenlohr valley. Higher up on the same side of that valley is the famous wood known under the name of Metzgers Graben, about 250 acres, with seven Oaks per acre, from 400 to 500 years

old, magnificent trees 120 to 150 feet high, mixed with Beech of all ages, giving the appearance of a virgin forest, in which all age-classes are represented.

Bonn, Germany. *D. Brandis.*

Notes.

A college extension course on subjects of practical interest to farmers is maintained by the Michigan Agricultural College. This course in systematic reading, known as the Farm Home Reading Circle, is open to all who wish to take it, and is free of expense except for books. The membership roll is already large and steadily increasing.

At a recent auction sale of Orchids in England a plant of Cattleya Skinneri alba was sold for 160 guineas. A small plant of the Quorn House variety of Cattleya Mendeli brought 150 guineas, although only a year ago it had been sold for twenty-eight guineas. Lælia purpurata Hardyana brought 130 guineas; a few years ago the same plant was sold for twenty guineas. These prices seem to indicate that, in spite of hard times, certain Orchids still command extraordinary prices, although, as a rule, the prices, except for a few rare varieties, are very much lower than they were several years ago.

The *Northwestern Lumberman*, which a few years ago took the ground that the supply of white pine in the north-western states was inexhaustible, now shows by what it believes to be authentic figures that the shortage in one district alone for the current year will be seven hundred million feet; and information points to a general shortage in all the north-western pine territory, running into billions of feet. Lumber-dealers of the north-west should begin to realize that the deficiency of northern pine must be made up from supplies from the Pine-forests of the south Atlantic and Gulf states, although an attempt will perhaps be made to replace it, for a few years at least, by yellow poplar and other non-coniferous woods.

The Board of Park Commissioners of the city of Buffalo recently decided to establish a botanic garden, and about 150 acres have been set aside for this purpose on the slope of a beautiful elevation at the southern boundary of the city, known as Limestone Ridge. The main drive-way through the site is partially constructed, and some grading has been done. Excavations have also been made for a series of lakes, and a conduit is being laid to Cazenovia Creek, two and a half miles away. A few groups of natural forest-trees on the ground will be preserved, but no planting has yet been done. If the liberal policy of the Park Commissioners is continued and the garden is managed in the scientific spirit, it cannot fail to become an educational institution of importance.

Undoubtedly the finest, for general horticultural purposes, of the early-flowering white-blossomed Spiræas is that known in gardens as S. Van Houttei, which is said to be a hybrid between the hardy S. trilobata and the beautiful, but only half-hardy S. Cantoniensis. Its large, pure white, short-stamened flowers are produced in close corymbose clusters on short, leafy lateral branchlets along the branches. The branches are slender and recurved. The plant will grow six feet or more in height and spread as much in diameter, and with ordinary care it will bear a profusion of flowers regularly every year. The dark green foliage is abundant, seems remarkably free from blemishing diseases, and it keeps a fresh and healthy appearance throughout the summer and well into the autumn, when many other species become leafless. It is usually in finest flower in the last week of May or about the 1st of June.

Owing to the warm days in early spring and the continued cool weather in May, many shrubs are blooming together now that are usually separated in their flowering season by one or two weeks. In a gorge in the northern part of Central Park a mass of Rhododendrons in flower, mostly R. maximum, are effective against a background of forest-trees, with a charming pool bordered by aquatic plants and Irises in the foreground. A group of Kalmias, Pæonies and several fine species of Rhododendrons are conspicuous on a knoll near the entrance at Fifty-ninth Street and Fifth Avenue. Viburnum plicatum, V. Opulus and the graceful Snowball, V. sterilis, are all in profuse bloom, and of many Spiræas in flower now S. opulifolia is especially attractive. The flowers of the Bush Honeysuckle, Lonicera Tartarica, of Philadelphus grandiflorus and other species of Syringas, of Kerria Japonica and the Acacia-like Bladder-senna, Colutea haleppica, appear with those of Deutzia crenata fl. pl. and D. gracilis. Other shrubs now in bloom are the California Privet; the yellow-flowering Currant, Ribes aurea; Weigela rosea and the golden-leaved variety nana aurea and other species of Weigelas. Rosa setigera and its hybrid, the double-flowered Queen of the Prairies, are among the most effective climbing Roses, and Harrison's Yellow and many other hardy Roses are already attractive. Chionanthus Virginica is draped with its lace-like flowers, and several species of Thorns and Tamarisks add to the variety of this unusual flowering season.

The two Chinese Magnolias, Magnolia Watsoni and M. parviflora, were flowering in the Arnold Arboretum last week. These two species produce their flowers after the leaves have attained nearly their full size, and resemble one another in their cup-shaped white perianths and bright red stamens. M. Watsoni, however, is the more beautiful plant, distinguished by its obovate-oblong leaves, glaucous and coated on the lower surface with pale soft hairs, four or five inches long and two or three inches broad, with ten to fourteen pairs of veins arcuate and united near the margins, and by its larger flowers, which are nearly four inches across, and are tinged with pink on the outer surface of the sepals, while on M. parviflora, the leaves, which are only about half as large as those of M. Watsoni, are orbicular-obovate, glabrous or slightly pilose below on the midribs and on the four or five pairs of remote veins. The flowers are not more than two or three inches across; they are nodding in the bud, and do not emit the powerful, slightly pungent, agreeable odor which is one of the great attractions of M. Watsoni. Among recent introductions of hardy trees and shrubs these two Magnolias, which appear to be only known in cultivation, their native country being uncertain, should take the highest rank.

We have more than once alluded to the work of the Division of Vegetable Pathology in Washington in experimenting upon the pollination of Pear-flowers. An interesting bulletin of eighty-six pages, with twelve full-page plates and a complete index, has recently been issued by the department. Some of the general conclusions are that many of the common varieties of Pears are incapable of setting fruit without cross-pollination. Even then, pollen from another tree of the same variety is no better than pollen from the same tree, and fruit will not set without pollen from a distinct horticultural variety—that is, from a tree that has grown from a distinct seed. Pollen of two varieties may be absolutely self-sterile, and at the same time perfectly cross-fertile. Bad weather during flowering time has an injurious influence on fruitage if it prevents insects from fecundating the flowers. Some varieties are capable of self-fertilization, and when this occurs the fruit is uniform in shape, differing from the crosses not only in size and form, but also, in some instances, in the time of maturity and in flavor. Fruits arising from cross-fertilization are well supplied with sound seed, while self-fertilized pears are deficient in seeds. Even with varieties capable of self-fecundation the pollen of another variety is prepotent, and unless the entrance of foreign pollen is excluded most of the fruits will be affected by it. The practical conclusion from the investigation is that solid blocks of one variety should not be planted in orchards, and that it is not desirable to have more than three or four rows of one variety together unless it is abundantly self-fertile. If large blocks of trees of one variety which habitually blossom well fail to fruit for a series of years, a probable remedy would be to graft in other varieties, so as to supply foreign pollen. Care should be taken that there should be enough bees within two or three miles to properly visit the blossoms, and insect visits should be favored by planting wind-breaks or setting the fruit-trees in sheltered positions. Apples are more inclined to be sterile to their own pollen than Pears, but the Quince seems to fruit nearly as well with its own pollen as with that of another variety.

The Gardeners' Chronicle announces the death, on the 30th of April last, of Thomas Lobb, who, in 1840, entered the services of Veitch & Sons as a collector. During the twenty years he traveled for the firm he visited the Kahsia Hills, Asam, Moulmein, Lower Burmah, the Malay Peninsula, Java, north Borneo and the Philippine Islands. Among his introductions, which have not been surpassed in horticultural value by those of any other collector in the Indo-Malayan regions, are many Orchids now common in gardens, the ancestral forms of the Javanese hybrid Rhododendrons and some of the first Nepenthes ever cultivated in Europe. Among the Orchids introduced by Mr. Lobb are Vanda cœrulea, Cypripedium villosum, Calanthe rosea, Coelogyne speciosa, Cypripedium barbatum and Phalænopsis intermedia. His elder brother, William Lobb, was also engaged in collecting plants for the Veitchs, the field of his successful labors extending from Brazil to California.